

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

1-7. (Canceled)

8. (Currently amended) A method of avoiding pop-up windows and excessive scrolling while displaying ~~related~~ data sub-items corresponding to an object displayed on a computer screen, the method comprising:
- determining that a cursor is ~~positioned to point at~~ initially hovering over the object on the computer screen, wherein the object represents a variable incorporated into a line of program code that is currently displayed on the computer screen;
  - evaluating the object to determine if the object:
    - has a variable value; and
    - has related data sub-items;
  - assembling variable values for the object and the related data sub-items; and
  - generating an expansion tree of data tips incorporating an auto-expansion feature, the auto-expansion feature comprising:
    - displaying on the computer screen the values of the object in a parent data tip, the parent data tip containing a first ~~window along with an~~ expansion widget indicator of the related data sub-items;[[,]]
    - determining that the cursor is next hovering over the first expansion widget indicator, and automatically launching ~~operable to launch~~ a first child data tip ~~window for~~ that is a part of the expansion tree of data tips, the first child data tip displaying the related data sub-items together with associated data values for each individual data sub-item; and
    - automatically dismissing the first child data tip upon determining that the cursor has been moved out of the first child data tip and is hovering inside the parent data tip.

~~, the parent and child data tip windows displayed simultaneously and  
overlaying at least a portion of the listing of the program code.~~

9-11. (Canceled)

12. (Currently amended) The method of claim 8, further comprising allowing the displayed values to become temporarily transparent allowing visual examination of underlying displayed information without dismissing the parent data tip and the first child data tip ~~windows~~.
13. (Currently amended) A system for displaying an expansion tree of data tips related to an object displayed on a computer screen, the system comprising:  
a computer screen to display the object and the expansion tree of data tips;  
a processor for executing instructions corresponding to the method of:  
determining that a cursor is ~~positioned to point at~~ initially hovering over the object, wherein the object represents a variable incorporated into a line of program code;  
loading and evaluating the object to determine if the object:  
has a variable value associated with the variable; and  
has related data sub-items; ~~and~~  
if the related data sub-items are capable of expansion into lower-tier sub-items;  
assembling variable values for the object and the related data sub-items;  
displaying the variable values of the object in a parent data tip ~~window~~  
located adjacent to the cursor selected object; and  
determining that the cursor is next hovering over a first expansion widget  
indicator contained in the parent data tip, and automatically launching  
~~displaying the related data sub-items in a child data tip window, wherein the~~  
~~object and the related data sub-items are related in a parent and child relationship, as an~~  
expansion data tip to the parent data tip, the child data tip window having a second  
expansion widget indicator associated with a first data sub-item contained inside the first

child data tip; a third expansion widget indicator associated with a second data sub-item contained inside the first child data tip; and wherein upon determining that the cursor is hovering over one of the second or the third expansion widget indicators, a second child data tip is automatically launched as a part of the expansion tree of data tips.

~~an expansion widget indication of the lower tier sub items if the lower tier sub-items exist;~~

~~determining that the cursor has been positioned upon; and~~

~~displaying an additional data tip window simultaneously with the parent and the child data tip windows, and overlaying at least a portion of the listing of the program code.~~

14. (Previously Presented) The system of claim 13, wherein evaluating the object further comprises evaluating an expression associated with the object.
15. (Previously Presented) The system of claim 13, wherein displaying the values of the object further comprises displaying a variable associated with the object and values of the variable.
16. (Cancelled)
17. (Currently amended) The system of claim 13, wherein the parent data tip ~~window~~ becomes temporarily transparent upon request allowing visual examination of underlying displayed information without dismissing the parent data tip ~~window~~.
18. (Currently amended) A machine-readable storage medium having instructions therein, executable by a machine to perform a method comprising:
  - determining that a cursor on a computer screen is positioned to point at the object, wherein the object represents a variable incorporated into a line of program code that is currently displayed on the computer screen;

loading the cursor-selected object;  
evaluating the object to determine if the object:  
    has a variable value associated with the variable;  
    has related data sub-items; and  
    if the related data sub-items are capable of expansion into lower-tier sub-items;  
assembling variable values for the object and the related data sub-items, wherein the object and the related data sub-items are related in a parent and child relationship; and  
generating an expansion tree of data tips incorporating an auto-expansion feature, the auto-expansion feature comprising:  
    displaying on the computer screen the variable values of the object in a parent data tip, the parent data tip containing a first window along with an expansion widget indicator of the related data sub-items;[[,]]  
    determining that the cursor is next positioned to point to the first expansion widget indicator, and automatically launching a first the display also including the lower-tier sub-items in a child data tip that is a part of the expansion tree of data tips, the first child data tip including the lower-tier sub-items; and  
    automatically dismissing the first child data tip upon determining that the cursor has been moved outside the first child data tip.  
    ~~window that is launched upon activation of the expansion widget indicator, the parent and child data tip windows displayed simultaneously and overlaying at least a portion of the listing of the program code.~~

19-20. (Canceled)

21. (Currently amended) A computer-implemented method for indicating on a computer display, the values of variables in a software program, the computer-implemented method comprising:

displaying on the computer display, an expression that is a part of the software program, the expression containing a variable;

detecting the positioning of a pointer upon the variable;

displaying thereon, a first data tip ~~window~~ showing a first expanded version of the variable, the first expanded version showing at least one individual data element that defines the variable, together with a data value for the at least one individual data element;

detecting the positioning of the pointer upon an expansion widget contained in the first data tip ~~window~~; and

automatically displaying thereon, a child data tip with at least a portion of the child data tip overlapping the parent data tip, in an expansion tree of interactive data tips that occupies less visible area on the computer display than an equivalent number of watch windows; and

automatically dismissing the first child data tip upon determining that the cursor has been moved outside the first child data tip.

~~window showing a second expansion version of the variable, the second expanded version showing the at least one individual data element together with additional individual data elements that define the variable, the second expansion version further showing corresponding data values for each of the additional individual elements.~~

22. (Currently amended) The method of claim 21, wherein the first child data tip shows a second expansion version of the variable, the second expanded version showing the at least one individual data element together with additional individual data elements that define the variable, the second expansion version further showing corresponding data values for each of the additional individual elements, wherein the corresponding data values are editable data values.

23. (Currently amended) The method of claim 22, further comprising:

detecting the positioning of the pointer upon a first individual element inside the child data tip-~~window~~; and  
automatically displaying thereon, an editing menu showing a list of editing operations that can be performed upon the first individual element contained in the child data tip-~~window~~.

24. (Currently amended) The method of claim 23, wherein the list of editing operations comprises editing an editable data value corresponding to the first individual element contained in the child data tip-~~window~~.
25. (Previously Presented) The method of claim 24, wherein the editable data value is a numeric value.
26. (Currently amended) The method of claim 24, wherein the editing operations comprise at least one of a) a copy operation, or b) a paste operation, ~~c) a “change to a binary display” operation, or d) a “change to a decimal display” operation.~~
27. (Previously Presented) The method of claim 21, wherein the expression is displayed on the computer display as a result of execution of a breakpoint contained in the software program.
28. (Previously Presented) The method of claim 27, wherein the first variable is incorporated into the expression prior to the expression being displayed on the computer as a result of execution of the breakpoint.
29. (Previously Presented) The method of claim 21, wherein the first variable is a pre-existing element of the expression prior to the displaying of the expression on the computer.

30. (Currently amended) The method of claim 8, wherein the ~~expression~~ line of program code is currently displayed on the computer screen as a result of execution of a breakpoint contained in the program code.
31. (New) The method of claim 8, wherein the first child data tip comprises:
  - a second expansion widget indicator associated with a first data sub-item contained inside the first child data tip;
  - a third expansion widget indicator associated with a second data sub-item contained inside the first child data tip; and
  - wherein upon determining that the cursor is hovering over one of the second or third expansion widget indicators, a second child data tip is automatically launched as a part of the expansion tree of data tips.
32. (New) The method of claim 31, wherein the first expansion widget indicator changes from a first status indication to a second status indication when the first child data tip is launched, the first status indication indicative of the object having related data sub-items hidden from view; and further wherein the second expansion widget indicator changes from a third status indication to a fourth status indication when the second child data tip is launched, the third status indication indicative of the first data sub-item having additional related data sub-items hidden from view.
33. (New) The method of claim 8, wherein the first expansion widget indicator changes from a plus sign to a minus sign when the first child data tip is launched, the plus sign indicative of the object having related data sub-items hidden from view that can be viewed by launching the first child data tip.